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Sawflies (Hymenoptera: Symphyta) from North-Western Georgia (Sakartvelo)

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Abstract

In total, 388 specimens belonging to 61 species of sawflies were collected in North-Western Georgia in 2020. Among the collected species, 29 are new country records.

Key words

South Caucasus, Biodiversity, Inventory, Insecta

Introduction

The date of reporting the first sawfly (Hymenoptera) species from the Republic of Georgia is uncertain. The authors of the nineteenth century frequently provided highly ambiguous locality data (e.g. "Patria Caucasus" or "Transcaucasia" or "Rossia: Caucasus"), making it impossible to determine whether the species was described from the Caucasian part of Russia, Georgia, or other Caucasian countries in general (Eversmann 1847; Mocsáry 1880, 1883; Konow 1899, 1902). The first checklist of Caucasian insects was published by Radde (1899) providing a list of around 80 species sawflies. Later on, the keys for sawflies and horntails (Symphyta) were compiled by Andguladze (1957) for Georgia and by Dadurian (1962) for Armenia. Due to the work of Dadurian (1962) and Andghuladze (1973) the number of sawflies occurring in Georgia has increased by 105 species. After a large gap of research, the last work was published very recently by Japoshvili and Haris (2022) reporting the 65 symphitans from Kintrishin National Park, of which 42 species were new country records. Thus, prior to our research, Georgia had 147 species of sawflies reported.

In the present contribution, we are reporting the results of a recent faunistic investigation of sawflies that resulted in a significant increase in species diversity in Georgia.

Materials and methods

Between June and August of 2020, malaise traps were installed in six localities in north-western Georgia (Fig. 1), which encompasses the two administrative units of Tkibuli and Tsageri districts. The Tkibuli district is located in the Okriba basin, on average, 600-800 m above sea level, alongside the river Tkibula. The maximum height is 1569 m (Jinjikhadze, Chkheidze 2018). The Cretaceous limestone of the Tsageri district is characterized by sharp erosive and karst forms and landslides for caves. There are also Paleogene and Neogene sediments, sandstones, clays, and conglomerates. The highest point is Mount Tsekuri at 3188 meters above sea level (Chichinadze 2022). The administrative centres of both districts are around 40 km away from each other. In both districts, the vegetation types are much the same. In particular, the main forest-forming trees are beech, horn-

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beam, chestnut, oak, maple, ash, and conifers (spruce, fir). The natural vegetation has been strongly transformed by human influence. There are many deciduous and evergreen shrubs in the forest understory. Elements of xerophytic vegetation are found on the southern-facing limestone slopes, while alder is a common element on the moist river banks (Nakhutsrishvili et al. 2015). The traps were operated from June to August of 2020. The sampling strategy was not designed to obtain quantitative data (for example, traps were not installed during the most active periods for sawflies due to logistic reasons, and also traps were operated for varying lengths of time), but rather to get a snapshot knowledge of the diversity of sawflies of the region.

For identification and for host-plant data, Zhelochovtsev's work on the sawflies of the European part of the former USSR (Zhelochovtsev 1988), the handbook of Lacourt on the identification of the European sawflies (Lacourt 2020), the monograph of Robert Benson on the Turkish sawfly fauna (Benson 1968), and Gussakovskij's monographs on the sawflies of the former USSR (Gussakovskij 1935, 1947) were used. We also consulted recent revisions (Gyurkovics and Haris 2014; Haris 2006; Koch 1988; Prous et.al. 2017; 2021) to confirm the identifications of particular taxa and Georgian Biodiversity Database (GBD) (Tarkhnishvili and Chaladze, 2013) for the distribution of species in Georgia. The general distribution of species are reported based on Roller and Haris (2008), Taeger et al. (2006), Sundukov (2017). Further, reference material was studied in the Budapest collection in the Hungarian Natural History Museum. The nomenclature used in this paper follows the latest monograph of European sawflies (Lacourt 2020) with special concern for the subfamily Nematinae to address the conclusions of Prous et al. (2014). The higher classification of sawflies applied in this work follows the Hymenoptera part of Fauna Europaea (Achterberg 2013). Host plant records are given according to Macek et al. (2020). New records for Georgia are marked with an asterisk (*).

Results

Order: Hymenoptera
Family: Argidae
Genus *Arge* Schrank, 1802
Arge cyanocrocea (Forster, 1771)

- GEORGIA • 1 ♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 5-12/VI/2020. 1 ♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020.

• Previously reported by Andguladze (1973). West Palaearctic species. Common host plants: *Rubus idaeus* and *Sanguisorba officinalis*.

Genus *Sterictiphora* Billberg, *1820*
Sterictiphora angelicae (Panzer, 1799)

- GEORGIA • 1 ♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 5-12/VI/2020. 1 ♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l.; 5-12/VI/2020.

• Previously reported by Japoshvili and Haris (2022). West Palaearctic. Frequent. Host plants: *Prunus spinosa* and *Rubus* spp.

Family: Tenthredinidae
Subfamily: Dolerinae
Genus *Dolerus* Panzer, 1801
Dolerus (*Poodolerus*) *gonager* (Fabricius, 1781)

- GEORGIA • 2 ♀♀, 1 ♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 5-12/VI/2020.

• Previously reported by Andguladze (1957; 1973). Palaearctic. Common host plants: *Graminae* spp.

Subfamily: Selandrinae
Genus *Aneugmenus* Hartig, 1837
Aneugmenus coronatus (Klug, 1818)

- GEORGIA • 1 ♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020. 1 ♀; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 19-25/VII/2020.

• Previously reported by Japoshvili and Haris (2022). Palaearctic species. Sporadic. Host plants: *Dryopteris filix-mas*, *Aspidium* sp., *Athyrium filix-femina* and *Pteridium aquilinum*.

A. padi (Linnaeus, 1760)*

- GEORGIA • 3 ♀♀; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 1 ♀; Tsageri, Doghurashi village, Sakenebeli; N42.698953, E42.826746; 1800 m a.s.l.; 20-26/VII/2020.

• Holarctic. Sporadic. Host plants: *Asplenium* sp. and *Pteridium aquilinum*.

Genus *Birka* Malaise, 1944
Birka (*Birka*) *annulitarsis* (Thomson, 1870)*

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Tsablanis Gora; N42.678243, E42.810053; 1470 m a.s.l.; 18-24/VIII/2020.

• West-Palaearctic species. Sporadic. Host plant unknown.

B. (*Birka*) *catellata* (Konow, 1900)

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 1 ♀; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 18-24/VIII/2020. 1 ♂; Tsageri, Doghurashi village, Sakenebeli; N42.696151, E42.812965; 1500 m a.s.l.; 20-26/VII/2020.

• Previous record is reported by Japoshvili, and Haris (2022). Ponto-Caspian and Turanian. Common species. Host plant unknown.

B. (*Birka*) *cinereipes* (Klug, 1816)

- GEORGIA • 1 ♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274, 780 m a.s.l.; 20-27/VI/2020. 1 ♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836, 550 m a.s.l., 5-12/VI/2020.

• Previously reported by Japoshvili and Haris (2022). Palaearctic. Sporadic. Host plants: *Myosotis* spp.

Genus *Nesoselandria* Rohwer, 1910
Nesoselandria morio (Fabricius, 1781)

Figure 1. A – Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362, 1070 m a.s.l. **B** – Tsageri, Doghurashi village, Tsablanis Gora; N42.678243, E42.810053, 1470 m a.s.l.; **C** – View of habitat in June 2020 at the same place as previous; **D** – Tsageri, Doghurashi village, Sakenebeli, N42.696151, E42.812965, 1500 m a.s.l.

- GEORGIA A • 1 ♀; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 5-12/VI/2020. 2 ♀♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020. 1 ♀; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 1 ♀; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 18-24/VIII/2020. 5 ♀♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020.
- Previously reported by Japoshvili and Haris (2022). Holarctic. Frequent. Host plants: *Brachytecium reflexum*, *Ceratodon purpureus*, *Chenopodium album*, *Dicranum scoparium*, *Fragaria vesca*, *Hedwigia ciliata*, *Myosotis arvensis*, *Plagiomnium cuspidatum*, *Plagiothecium denticulatum*, *Polygonum aviculare*, *Polytrichum commune*, *Pseudobryum cinclidiodes*, *Sanionia uncinata*, *Stellaria media*, *Veronica chamaedrys* and *V. officinalis*.

Subfamily: Allantinae

Genus *Ametastegia* Costa, 1882

Ametastegia (*Protemphytus*) *pallipes* (Spinola, 1808)

- GEORGIA • 2 ♀♀; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l.; 5-12/VI/2020. 2 ♀♀; Tsageri, Doghurashi village, Sakenebeli; N42.696151, E42.812965; 1500 m a.s.l.; 20-26/VII/2020. 2 ♀♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020. 1 ♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020.

• Previously reported by Japoshvili and Haris (2022). Holarctic. Frequent. Host plant: *Viola* spp.

A. (*Protemphytus*) *perla* (Klug, 1818)*

- GEORGIA • 1 ♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020.

• West-Palaearctic species. Sporadic. Host plants: *Salix* sp., it is also reported from *Quercus* and *Populus* spp.

A. (Protemphytus) tenera (Fallén, 1808)

- GEORGIA • 6 ♀♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020.

• Holarctic. Frequent. Larva on *Rumex* spp.

Genus *Allantus* Panzer, 1801

Allantus (*Emphytus*) *calceatus* (Klug, 1818)

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 19-25/VII/2020.

• Palaearctic. Sporadic, locally frequent. Host plants: *Rubus*, *Sanguisorba*, *Rosa*, *Filipendula*, *Fragaria* and *Alchemilla* spp.

A. (*Emphytus*) *cinctus* (Linnaeus, 1758)

- GEORGIA • 1 ♀, 5 ♂♂; Tsageri, Doghurashi village, Sakenebeli; N42.696151, E42.812965; 1500 m a.s.l.; 20-26/VII/2020. 5 ♀♀, 9 ♂♂; Tsageri, Doghurashi village, Tsablanis Gora; N42.678243, E42.810053; 1470 m a.s.l.; 5-12/VI/2020. 7 ♀♀, 50 ♂♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 1 ♀, 3 ♂♂; Tsageri, Doghurashi village, Sakenebeli; N42.698953, E42.826746; 1800 m a.s.l.; 20-26/VII/2020. 4 ♀♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020. 3 ♀♀, 12 ♂♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020. 1 ♀; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 7 ♂♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 18-24/VIII/2020.

• Previously reported by Japoshvili and Haris (2022). Holarctic. Common. Host plants: *Rosa* and *Fragaria* spp.

A. (*Emphytus*) *didymus* (Klug, 1818)

- GEORGIA • 1 ♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

• West Palaearctic. Sporadic. Larva on *Sanguisorba minor*; old records from *Rubus* and *Rosa* spp. need checking.

A. (*Emphytus*) *melanarius* (Klug, 1818)*

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 1 ♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020.

• West Palaearctic. Frequent. Host plant: *Cornus sanguinea*.

Genus *Athalia* Leach, 1817

Athalia (*circularis*) *circularis* (Klug, 1815)

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Tsablanis Gora; N42.678243, E42.810053; 1470 m a.s.l.; 18-24/VIII/2020. 9 ♀♀; Tsageri, Doghurashi village, Sakenebeli; N42.698953, E42.826746; 1800 m a.s.l.; 20-26/VII/2020. 1 ♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 18-24/VIII/2020. 1 ♀; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 19-25/VII/2020. 6 ♀♀, 6 ♂♂; Tsageri, Doghurashi village, Sakenebeli; N42.696151, E42.812965; 1500 m a.s.l.; 20-26/VII/2020.

• Color form "*cordatoides*". Previously reported by Japoshvili and Haris (2022). Palaearctic. Common. Host plants: *Rosa* and *Fragaria* spp.

A. cordata Serville, 1823

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 1 ♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 18-24/VIII/2020. 1 ♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020.

• Previously reported by Japoshvili and Haris (2022). West Palaearctic. Common. Host plants: *Misopates orontinum*, *Antirrhinum majus*, *Ajuga reptans*, *Teucrium scorodonia* and *Plantago* spp.

A. liberta (Klug, 1815)

- GEORGIA • 1 ♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274, 780 m a.s.l.; 13-20/VI/2020.

• Previously reported by Japoshvili and Haris (2022). West Palaearctic species. Frequent. Host plants: *Alliaria petiolata, Arabidopsis thaliana, Cardamine hirsuta* and *Sisymbrium officinale*.

Genus *Empria* Lepeletier & Serville, 1828

Empria tridens (Konow, 1896)*

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 5-12/VI/2020.

• Palaearctic. Frequent. Host plants: *Geum* spp. and *Rubus idaeus*.

Genus *Monostegia* O.G. Costa, 1859

Monostegia abdominalis (Fabricius, 1798)*

- GEORGIA • 1 ♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 18-24/VIII/2020.

- Palaearctic, introduced to US and Canada. Sporadic, locally frequent. Host plants: *Glaux maritima*, *Lysimachia numularia* and *L. vulgaris*.

Genus *Taxonus* Hartig, 1837

Taxonus sticticus (Klug, 1817)*

- GEORGIA • 2 ♂♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- West Palaearctic. Sporadic. Host plant unknown.

Subfamily: Heterarthrinae

Genus *Caliroa* Costa, 1859

Caliroa cerasi (Linnaeus, 1758)

- GEORGIA • 3 ♂♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 1 ♀; Tsageri, Doghurashi village, Tsablanis Gora; N42.678243, E42.810053; 1470 m a.s.l.; 18-24/VIII/2020. 1 ♀; Tsageri, Doghurashi village, Sakenebeli; N42.696151, E42.812965; 1500 m a.s.l.; 20-26/VII/2020,

- Previously reported by Andguladze (1973). Cosmopolitan. Frequent. Host plants: *Pyrus*, *Malus*, *Prunus*, *Crataegus*, *Sorbus*, *Rosa*, *Cydonia*, *Mespilus*, *Rubus*, *Amygdalus*, *Cerasus*, *Amelanchier*, *Pyracantha*, *Cotoneaster* rarely *Quercus*, *Salix* spp.

C. cothurnata (Serville, 1823)

- GEORGIA • 1 ♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 1 ♂; Tsageri, Doghurashi village, Tsablanis Gora; N42.678243, E42.810053; 1470 m a.s.l.; 5-12/VI/2020. 1 ♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020.

- Previously reported by Japoshvili and Haris (2022). West Palaearctic. Frequent. Host plant: *Quercus* spp.

Genus *Metallus* Forbes, 1885

Metallus beckeri (Konow, 1904)

- GEORGIA • 2 ♀♀; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- Previously reported by Japoshvili and Haris (2022). Ponto-Caspian-Persian species. Frequent. Hostplant unknown.

M. pumilus (Klug, 1816)

- GEORGIA • 1 ♂; Tsageri, Doghurashi village, Sakenebeli, N42.696151, E42.812965; 1500 m a.s.l.; 20-26/VII/2020. 1 ♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020. 1 ♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 18-24/VIII/2020. 2 ♂♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 1 ♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 5-12/VI/2020. 1 ♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 19-25/VII/2020.

- Previously reported by Japoshvili and Haris (2022). Palaearctic species. Common. Host plants: *Rubus caesius* and *Rubus idaeus*.

Subfamily: **Blennocampinae**

Genus *Eurhadinoceraea* Enslin, 1920

Eurhadinoceraea fulviventris (Scopoli, 1763)

- GEORGIA • 1 ♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- Previously reported by Japoshvili and Haris (2022). Southern part of the Palaearctic region. Frequent, locally common. Hostplant unknown.

E. vopiscus (Konow, 1899)

- GEORGIA • 3 ♀♀; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 3 ♀♀, 1 ♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020. 4 ♂♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020. 1 ♀, 1 ♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 3 ♀♀, 12 ♂♂; Tsageri, Doghurashi village, Tsablanis Gora; N42.678243, E42.810053; 1470 m a.s.l.; 5-12/VI/2020. 4 ♂♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020.

- Previously reported by Andguladze (1973) and Japoshvili and Haris (2022). Ponto-Caspian species. Common. Hostplants: Poaceae.

Subfamily: **Tenthredininae**

Genus *Aglaostigma* Kirby, 1882

Aglaostigma (Bivena) langei (Konow, 1894)*

- GEORGIA • 5 ♂♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- West Palaearctic species. Sporadic. Host plants: *Salix* spp., *Chamaenerion angustifolium* and *Epilobium palustre*.

Genus *Macrophya* Dahlbom, 1835

Macrophya (*Macrophya*) *alboannulata* Costa, 1859*

- GEORGIA • 1 ♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020.

- West Palaearctic species. Frequent. Host plants: *Sambucus nigra*, *S. racemosa* and *S. ebulus*.

M. (*Macrophya*) *annulata* (Geoffroy, 1785)

- GEORGIA • 3 ♂♂; Tsageri, Doghurashi village, Tsablanis Gora; N42.678243, E42.810053; 1470 m a.s.l.; 5-12/VI/2020.

- Previously reported by Andguladze (1973). Palaearctic. Frequent. Host plants:*Potentilla reptans*, *Origanum vulgare*, *Euphorbia*, *Rosa*, *Rubus* and *Sambucus* spp.

M. (*Macrophya*) *blanda* (Fabricius, 1775)

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 5-12/VI/2020. 1 ♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020. 1 ♀,

2 ♂♂; Tsageri, Doghurashi village, Sakenebeli; N42.698953, E42.826746; 1800 m a.s.l.; 20-26/VII/2020.

- Palaearctic. Frequent. Host plants: *Fragaria* spp., *Rubus* spp. and *Potentilla reptans*.

M. (*Macrophya*) *diversipes* (Schrank, 1782)

- GEORGIA • 2 ♀♀; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 5-12/VI/2020.

- Palaearctic. Frequent. Host plants: *Fragaria* and *Rubus* spp.

M. (*Macrophya*) *duodecimpunctata* (Linnaeus, 1758)*

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 5-12/VI/2020.

- Palaearctic. Frequent. Host plants: Graminae, Cyperaceae and *Carex* spp. like *Carex brizoides* and *C. vesicaria*. The species is listed in GBD. However, the record is based on Zhelochovtsev and Zinoviev (1996), in which no relevant information (examined material, vouchers, or references) is given. Thus, we consider this species as a new record for the country.

Macrophya (*Macrophya*) *erythrocnema* Costa, 1859*

- GEORGIA • 1 ♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020.

- West Palaearctic. Sporadic. Host plant: *Knautia arvensis*.

M. (*Macrophya*) *sanguinolenta* (Gmelin, 1790)

- GEORGIA • 5 ♀♀; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 2 ♀♀, 1 ♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020.

- Palaearctic species. Frequent. Host plants: *Galenopsis*, *Senecio* and *Veronica* spp.

M. (*Macrophya*) *superba* Tischbein, 1852*

- GEORGIA • 1 ♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020.

- Ponto-Caspian, Mediterranean. Frequent. Host plant unknown.

Genus *Rhogogaster* Konow, 1884

Rhogogaster (*Rhogogaster*) *punctulata* (Klug, 1817)*

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- Palaearctic. Sporadic. Host plants: *Salix*, *Sorbus*, *Rosa*, *Betula*, *Alnus*, *Fraxinus*, *Prunus* and *Corylus* spp.

Genus *Tenthredo* Linnaeus, 1758

Tenthredo (*Maculedo*) *maculata* Geoffroy, 1785*

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Tsablanis Gora; N42.678243, E42.810053; 1470 m a.s.l.; 5-12/VI/2020.

- West Palaearctic. Sporadic. Host plants: *Brachypodium* spp. and *Dactylis* spp. The species is listed in GBD. However, the record is based on Zhelochovtsev and Zinoviev (1996), in which no relevant information (examined material, vouchers, or references) is given. Thus, we consider this species as a new record for the country.

T. semicolon Mol, 2013*

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Sakenebeli, 42.698953, 42.826746; 1800 m a.s.l.; 20-26/VII/2020.

- West Palaearctic. Sporadic species. Host plant unknown. Comment: Replacement name of *Tenthredo punctulata* Konow, 1887

Genus *Tenthredopsis* Costa, 1859

Tenthredopsis litterata (Geoffroy, 1785)*

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Sakenebeli; 42.696151, 42.812965; 1500 m a.s.l.; 20-26/VII/2020.

- West Palaearctic. Frequent. Host plants:*Agrostis*, *Dactylis* and *Calamagrostis* spp.

T. nassata (Linnaeus, 1767)*

- GEORGIA • 1 ♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020.

- Palaearctic species. Sporadic, Host plants: *Dactylis glomerata*, *Deschampsia caespitosa*, *D. calmagrostis*, *Flexuosa* spp., *Holcus* spp., *Lolium perenne*, *Agropyron* spp., *Carex* spp., *Anthriscus silvestris* and *Artemisia* spp.

T. ornatrix Konow, 1890*

- GEORGIA • 5 ♂♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 5-12/VI/2020.

- Ponto-caspian species. Host plant unknown.

T. scutellaris (Fabricius, 1804)*

- GEORGIA • 2 ♀♀, 1 ♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- Palaearctic. Sporadic. Host plants: *Poa pratense*, *Festuca elatior*, *Dactylis glomerata* and *Elytrigia repens*.

T. tarsata (Fabricius, 1804)*

- GEORGIA • 3 ♂♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- West Palaearctic species. Frequent. Host plants: Poaceae, particularly *Brachypodium silvaticum*.

T. viridis Zhelochovtsev, 1941*

- GEORGIA • 2 ♀♀; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- Ponto-Caspian species. Sporadic. Host plant unknown.

Subfamily: **Nematinae**

Genus *Cladius* Illiger, 1807

Cladius (*Cladius*) *pectinicornis* (Geoffroy, 1785)

- GEORGIA • 3 ♂♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020. 3 ♀♀; Tsageri, Doghurashi village, Sakenebeli; 42.698953, 42.826746; 1800 m a.s.l.; 20-26/VII/2020. 7 ♂♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020. 1 ♀, 2 ♂♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 1 ♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 18-24/VIII/2020. 2 ♀♀, 3 ♂♂; Tsag-

eri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- Previously reported by Andguladze (1957; 1973) and Japoshvili and Haris (2022). Holarctic. Common. Host plants: *Alchemilla*, *Filipendula*, *Fragaria*, *Potentilla*, *Sanguisorba*, *Rosa* and *Rubus* spp.

Genus *Priophorus* Dahlbom, 1835

Priophorus brullei Dahlbom, 1835

- GEORGIA • 1 ♂; Tsageri, Doghurashi village, Sakenebeli; 42.696151, 42.812965; 1500 m a.s.l.; 20-26/VII/2020. 1 ♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020. 1 ♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020.

- Previously reported by Japoshvili and Haris (2022). Cosmopolitan. Common. Hosts plants: *Rubus* spp. like *R. idaeus*, *R. caesius* and *R. saxatilis*.

P. compressicornis (Fabricius, 1804)

- GEORGIA • 1 ♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 2 ♂♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020. 4 ♂♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020. 1 ♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- Previously reported by Japoshvili and Haris (2022). Holarctic. Frequent pest. Host plants: *Betula*, *Cotoneaster*, *Prunus*, *Rubus*, *Sorbus*, *Fragaria*, *Crataegus*, *Corylus* and *Rosa* spp.

P. rufipes (Serville, 1823)*

- GEORGIA • 1 ♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- West Palaearctic. Sporadic. Host plants: *Ulmus* spp.

Genus *Pristiphora* Latreille, 1810

Pristiphora armata (Thomson, 1863)

- GEORGIA • 1 ♀, 1 ♂♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- Palaearctic species. Frequent. Host plants: *Crataegus* spp.

P. leucopus (Hellén, 1948)

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- Previously reported by Japoshvili and Haris (2022). West Palaearctic species. Frequent. Host plants: *Tilia* spp.

P. pallidiventris (Falln, 1808)*

- GEORGIA • 1 ♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020.

- Holarctic. Frequent. Host plants: *Geum*, *Potentilla*, *Rubus* and *Filipendula* spp. The species is listed in GBD. However, the record is erroneously based on Haris (2006).

Genus *Pteronidea* Rohwer, 1911

Pteronidea bergmanni (Dahlbom, 1835)*

- GEORGIA • 1 ♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020.

- Palaearctic species. Frequent. Host plant: *Salix* spp.

P. myosotidis (Fabricius, 1804)

- GEORGIA • 1 ♀, 33 ♂♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020. 12 ♂♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 5-12/VI/2020. 1 ♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020. 1 ♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 18-24/VIII/2020. 2 ♂♂; Tsageri, Doghurashi village, Nalobievi; N42.669761, E42.785362; 1070 m a.s.l.; 19-25/VII/2020.

- Previously reported by Japoshvili and Haris (2022). Palaearctic. Common. Host plants: *Onobrychis*, *Vicia*, *Trifolium* spp. also *Lathyrus pratensis*.

P. oligospila (Förster, 1854)*

- GEORGIA • 2 ♂♂; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 13-20/VI/2020.

- Originally Palaearctic species, introduced globally, now cosmopolitan. Frequent. Host plants: *Salix* spp. It is also reported from *Populus* spp.

P. tibialis (Newman, 1837)*

- GEORGIA • 1 ♀; Tkibuli, Mukhura village, Gabrichidzeebis Ubani; N42.319369, E43.061274; 780 m a.s.l.; 20-27/VI/2020.

- Nearctic, introduced to Europe with *Robinia*, invasie in the Caucasus. Frequent. Larva on *Robinia pseudacacia* and also on *Robinia viscosa*, *R. hispida* and *Gleditsia triacanthos*.

Genus *Pachynematus* Konow, 1890

Pachynematus obductus (Hartig, 1837)*

- GEORGIA • 1 ♀; Tsageri, Doghurashi village, Sakenebeli; 42.698953, 42.826746; 1800 m a.s.l.; 20-26/VII/2020.

- Holarctic. Sporadic. Larva on Gramineae (*Poa*, *Festuca* spp.) and *Carex*.

Genus *Stauronematus* Benson, 1953

Stauronematus platycerus (Hartig, 1840)

- GEORGIA • 1 ♂; Tsageri, Doghurashi village, Katsunara; N42.667145, E42.770836; 550 m a.s.l., 5-12/VI/2020.

- Previously reported by Japoshvili and Haris (2022). Palaearctic species. Frequent. Host plants: *Populus* spp.: *Populus tremula, P. alba, P. nigra, P. balsamifera* and *Salix* spp. The only European Symphyta which larva erects a palisade of dried saliva around its feeding place.

Family: Cephidae

Genus *Calameuta* Konow, 1896

Calameuta (Calameuta) antigae (Konow, 1894)*

- GEORGIA • 3 ♀♀; Tsageri, Doghurashi village, Tsablanis Gora; N42.678243, E42.810053; 1470 m a.s.l.; 5-12/VI/2020.

- So far, it's been known only from Spain (West Palaearctic). It seems, that the speice has a Ponto-Caspian – Mediterranean distribution and is relatively rare. Host plant unknown.

C. gracilicornis (Konow, 1896)*

- GEORGIA • 2 ♀♀, 8 ♂♂; Tsageri, Doghurashi village, Tsablanis Gora; N42.678243, E42.810053; 1470 m a.s.l.; 5-12/VI/2020.
- Ponto-caspian. Host plant unknown.

Conclussions

Prior to our study, 147 species of sawflies had been reported from Georgia (Japoshvili and Haris 2022). During this study, 29 new species for Georgia were reported, and thus the number of sawflies found in Georgia increased to 183. Given the rather scarce and sporadic investigation of sawflies in Georgia, the species number is expected to be significantly higher. Furthermore, we collected 61 species in north-west Georgia, which indicates that this area supports a much higher diversity of sawflies compared to south-west Georgia. Indeed, extensive, whole-year malaise trap sampling of sawflies in Kintrishi Protected areas revealed 65 species only (Japoshvili and Haris, 2022).

The density of sawflies and their species richness were measured at five different altitudes (from 550 to 1800 meters above sea level). The highest diversity and density, with 40% (155) of individuals belonging to 39 species, were collected at 1070 m. The number of individuals and raw species richness decrease at lower (550 m - 16 ind/9sp, 780 m - 121ind/28sp) and higher altitudes (1470 m - 74in/15sp, 1800 m - 22in/7sp). However, this kind of inference is not statistically valid as the sampling intensity was also higher at the elevations with higher individual/species density. In addition, the sampling period was behind the activity peaks (April and May) of sawflies. Accordingly, obtained numbers of individuals or species density cannot be considered as comprehensive quantitative biodiversity data.

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References

Achterberg C (2013) Hymenoptera in Fauna Europaea version 2.6.2. http://www.faunaeur.org (Accessed 02 Oct 2021).

Andguladze T (1957) The key to the Sawflies and Horntails distributed in Georgia. Academy of Science of Georgian SSR. pp 57. (In Georgian).

Andguladze T (1973) Fauna of horntails and sawflies (Hymenoptera: Chalastogastra) of Kartli plain. Materials for fauna of Georgia 3: 148-178. (In Georgian).

Benson RB (1968) Hymenoptera from Turkey, Symphyta. Bulletin of the British Museum, Entomology series 22(4): 111-207. https://doi.org/10.5962/bhl.part.9952.

Chichinadze T (2022). Geomorphological Zoning of Racha Region for Geopark Planning. Open Journal of Geology 12: 179-187. https://doi.org/10.4236/ojg.2022.123009.

Dadurian H (1962) On the Sawflies and the Horntails of Armenian SSR (Insecta - Hymenoptera, Symphyta). Academy of Sciences of the Armenian SSR, Zoology Papers 12: 63-98. (In Russian).

Eversmann E (1847) Fauna hymenopterologica volgo-uralensis exhibens Hymenopterorum species quas in provinciis Volgam fluvium inter et montes Uralenses sitis observavit et nunc descripsit. Bulletin de la Société Impériale des Naturalistes de Moscou 20(1): 3-68.

Gussakovskij V (1935) Insectes Hyménoptéres, Chalastogastra 1. Fauna SSSR, Moskva, Leningrad, Academie des Sciences de l'URSS, Moscou, Leningrad 2(1): 1-453.

Gussakovskij V (1947) Insectes Hyménoptéres, Chalastogastra 2. Fauna SSSR, Moskva, Leningrad, Academie des Sciences de l'URSS, Moscou, Leningrad 2(2): 1-235.

Gyurkovics H, Haris A (2014) The genus Tenthredopsis Costa, 1859 in Hungary (Hymenoptera: Symphyta). Natura Somogyiensis 24: 99-124. https://doi.org/10.24394/NatSom.2014.24.99.

Haris A (2006) Study on the Palaearctic Pristiphora species (Hymenoptera: Tenthredinidae). Natura Somogyiensis 9: 201-277. https://doi.org/10.24394/NatSom.2006.9.201.

Japoshvili G, Haris A (2022) Sawflies (Hymenoptera: Symphyta) of the Kintrishi National Park, South-western Georgia (Sakartvelo). Annals of Agrarian Science 20(1): 12-27.

Jinjikhadze P, Chkheidze O (2018) Geomorphological Zoning of Okriba Karst. Buletin of the Georgian National Academy of Sciences 12(2): 76-84.

Koch F (1988) Die Gattung Sterictiphora Billberg (Insecta, Hymenoptera, Symphyta: Argidae). - Entomologische Abhandlungen Dresden 52(2): 29-61.

Konow F (1899) Einige neue Chalastogastra-Gattungen und Arten. Entomologische Nachrichten (Herausgegeben von Dr. F. Karsch), Berlin 25(5): 73-79.

Konow F (1902) Novum genus et novae species Chalastogastrorum Rossiae. Trudy Jaroslavskogo Estestvenno-Istoriceskogo Obscestva, Jaroslavl 1: 1-4.

Lacourt J (2020) Sawflies of Europe: Hymenoptera of Europe 2 N. A. P. Editions. Verriéres-le-Buisson 876 pp.

Macek J, Roller L, Beneš K, Holý K, Holuša J (2020) Blanokřídlí České a Slovenské republiky II. Širopasí – Academia Praha. 669 pp.

Mocsáry S (1880) Hymenoptera nova e variis orbis terrarum partibus. [Új hártyaröptűek a Föld különböző részeiből.] - Természetrajzi Füzetek, Budapest 4(4): 267-275.

Mocsáry S (1883) Hymenoptera nova europaea et exotica. [Európai és másföldi új hártyaröptűek.] - Értekezések a természettudományok köréből, Budapest 13(11): 1-72.

Nakhutsrishvili G, Zazanashvili N, Batsatsashvili K, Montalvo MC (2015) Colchic and Hyrcanian forests of the Caucasus: similarities, differences and conservation status. Flora Mediterranea 25(Special Issue): 185-192.

Prous M, Kramp K, Vikberg V, Liston A (2017) North-Western Palaearctic species of Pristiphora (Hymenoptera, Tenthredinidae). Journal of Hymenoptera Research 59: 1–190. https://doi.org/10.3897/jhr.29.12656.

Prous M, Liston A, Mutanen M (2021) Revision of the West Palaearctic Euura bergmanni and oligospila groups (Hymenoptera, Tenthredinidae). Journal of Hymenoptera Research 84: 187–269. https://doi.org/10.3897/jhr.84.68637.

Radde G (1899) Museum Caucasicum Vol. 1. Zoology, Die Sammlungen des kaukasischen Museums, im Vereine mit Special-Gelehrten bearbeitet und herausgegeben von Dr. Gustav Radde Band I: Zoologie, Vol. 1. 520 pp.

Roller L, Haris A (2008) Sawflies of the Carpathian Basin, History and Current Research. Natura Somogyiensis 11. Kaposvár, 261 pp.

Sundukov Y (2017) Suborder Symphyta – Sawflies and woodwasps. In: Belokobylskij SA, Lelej AS (Ed.). Annotated catalogue of the Hymenoptera of Russia, Volume I, Symphyta and Apocrita: Aculeata. Proceedings of the Zoological Institute RAS. 321(Supplement 6): 1-475. https://doi.org/10.31610/trudyzin/2017.supl.6.5.

Taeger A, Blank S, Liston A (2006) European sawflies (Hymenoptera: Symphyta) - A Species Checklist for the Countries. 399-504. In: Blank SM, Schmift S, Taeger A (Ed.) Recent Symphyta Research: Synthesis and Prospects. Goecke & Evers, Kelter. 701 pp.

Tarkhnishvili D, Chaladze G (2013) Georgian Biodiversity Database. http://biodiversity-georgia.net/index.php [Accessed 30 Oct 2022].

Zhelochovtsev A (1988) Otryad Hymenoptera – Pereponchatokrylye, Podotryad Symphyta – Sidyachebryukhie, 7-234. In: Medvedev KH (Ed.) Opredelitel nasekomykh evropeiskoi chasti SSSR, Vol. 3 Hymenoptera, Part 6. Nauka, Leningrad. https://doi.org/10.5962/bhl.title.46334. (In Russian).

Zhelochovtsev AN, Zinovjev AG (1996) A list of the sawflies and horntails (Hymenoptera, Symphyta) of the fauna of Russia and adjacent territories, II. Entomological Review 75(2): 357-379.